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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/852,800	05/11/2001	Yoshihide Hayashizaki	2870-0168P	5670
2292	7590	04/22/2004	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			NOGUEROLA, ALEXANDER STEPHAN	
			ART UNIT	PAPER NUMBER
			1753	
DATE MAILED: 04/22/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/852,800	<b>Applicant(s)</b> HAYASHIZAKI, YOSHIHIDE	
	<b>Examiner</b> ALEX NOGUEROLA	<b>Art Unit</b> 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 February 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 22-52 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 36 and 45-48 is/are allowed.
- 6) ☒ Claim(s) 22-31, 34, 44 and 49-52 is/are rejected.
- 7) ☒ Claim(s) 32, 33, 35 and 37-43 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Response to Amendment***

1. Applicant's amendment of February 18, 2004 does not render the application allowable.

***Response to Arguments***

2. Applicant's arguments filed February 18, 2004 have been fully considered but they are not persuasive. Although claims 1-21 have been cancelled, Applicant's remarks on the prior art applied in the rejection of these claims bear commenting because this art has been applied in rejections of new claims 22-52.

Regarding the rejection of claims 1-3, 14-16, and 20 as being obvious under 35 U.S.C. 103(a) over Liu et al. in view of Ogawa, which claims have been recast as claims 22-28, Applicant asserts, "There is no suggestion that either reference [Liu or Ogawa] should be modified by omission of the step of silanizing the support surface. Indeed such modification would completely destroy the teachings of the Liu and Ogawa references and so is entirely inconsistent with them." See the last paragraph on page 9 bridging to page 10. Nowhere in the claims has the examiner found an explicit or implicit limitation of the alleged requirement of a step of not silanizing the support surface, so this issue is not relevant to patentability of the claims listed above. Even so, the examiner does not understand why a step of not silanizing the support surface would "destroy the teachings of Liu and Ogawa." Liu discloses that linear polyacrylamide *may* be deposited on the substrate surface (col. 10, ll. 24-31), which would involve silanizing

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the substrate surface. However, other sieving matrices may be used (col. 10, ll. 51-55) or indeed, as one with ordinary skill in the art would recognize, no sieving medium may be used. Ogawa was cited for teaching using a weak alkali solution to clean a glass surface before depositing a polymer film on it. There is no suggestion that the weak alkali solution can only be used to clean a surface that is to be silanized, or is critical or even involved in the silanization process. Indeed, one with ordinary skill in the art would rinse the weak alkali solution off the support surface before applying the polymer film to the support surface. Church is cited for teaching a particular weak alkali solution to clean glass.

Regarding the rejection of claims 6-12 as being obvious over Osterhoudt et al. under 35 U.S.C. 103(a), which claims have been recast as claims 29-54, Applicant asserts that Osterhoudt does not disclose an electrophoretic gel comprising two or more organic solvents. The examiner respectfully disagrees. Claims 29-35, 44, 51, and 52 are only directed to an "electrophoresis" gel, not an electrophoresis system comprising a gel as claimed. So, that Osterhoudt et al. discloses the claimed gel as an intermediate product in the formation of his final gel is not a patentable distinction in itself because the intermediate product is tangible and can be permanent (not processed any further):

‘ “Where the products produced by the reference process are neither transitory nor ephemeral but are by nature tangible and permanent pending the subsequent treatment to which they are subjected, Held that such products, thought intermediate, in the reference, are anticipatory of the product defined by the claims on appeal.” Ex Parte Brinton 82 USPQ 112 quoting In re Johnson et al., 605 O.G. 175.[74 USPQ 161]’

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It should be noted that Osterhoudt et al. also disclose an embodiment in which a solution containing two organic solvents (methanol and acetic acid) are added to the electrophoresis gel after an electrophoresis run (col. 11, ll. 7-10).

***Claim Rejections - 35 USC § 112***

3. Claims 22-28, 49, and 50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention:

a) Claim 22, step (i) implies that electrophoretic matrix already contacts the support before the following step (ii) of “filling or coating said support with an electrophoretic matrix”; and

b) Claim 49 recites the limitation "polar solvent" in 1. There is insufficient antecedent basis for this limitation in the claim.

4. Note that dependent claims will have the deficiencies of base and intervening claims.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 29-31, 34, 44, 51, and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Osterhoudt et al. (US 5,066,376).

Addressing claim 29, Osterhoudt et al. discloses two situations that meet Applicant's claim limitations. In the first situation, while preparing the acrylamide gel it is precipitated from a solution comprising isopropanol by adding acetone (col. 9, ll. 9-23). Isopropanol and acetone are both organic solvents. It should be noted that the claim is only directed to an "electrophoresis" gel, not an electrophoresis system comprising a gel. So, that Osterhoudt et al. discloses the claimed gel as an intermediate product in the formation of his final gel is not a patentable distinction in itself because the intermediate product is tangible and can be permanent (not processed any further):

‘ “Where the products produced by the reference process are neither transitory nor ephemeral but are by nature tangible and permanent pending the subsequent treatment to which they are subjected, Held that such products, though intermediate, in the reference, are anticipatory of the product defined by the claims on appeal.” Ex Parte Brinton 82 USPQ 112 quoting In re Johnson et al., 605 O.G. 175 [74 USPQ 161]’

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In the second situation that meets Applicant's claim limitations the gel is stained with a solution comprising methanol and acetic acid (col. 11, ll. 7-10), which are both organic solvents.

Addressing claim 30, isopropanol and methanol are alcohols.

Addressing claim 31, in one embodiment the gel comprises methanol and acetic acid (col. 11, ll. 7-10).

Addressing claim 34, the electrophoretic gel comprises "a water-soluble copolymer of an acrylamide monomer and at least one comonomer copolymerizable therewith [emphasis added]" (abstract).

Addressing claim 44, this claim is a product-by-process claim, so barring a showing of a material difference in the electrophoresis gel disclosed by Osterhoudt et al., which comprises a polymerized composition comprising acrylamide or a derivative thereof, from Applicant's claimed electrophoretic gel they will be construed to be the same. It should be noted, for example, that Applicant's claim does not require at least two organic solvents in the final product, but only during polymerization.

Addressing claims 51 and 52, having the gel in the form of a slab gel is implied (col. 11, ll. 7-10) by the gel being between two glass plates. The gel may be a capillary gel may also be in other shapes or forms (col. 5, ll. 12-16).

***Claim Rejections - 35 USC § 103***

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (US 6,533,914 B1) in view of Ogawa (US 6,013,331).

Addressing claim 22, The Liu et al. reference teaches a method for preparing an electrophoretic separation article comprising

i) providing a support comprising a silicon-containing material (col. 55-65, note that glass contains silicon) and washing at least a portion of a surface of the support that contacts an electrophoretic matrix with an alkali solution (col. 10, ll. 24-28); and

ii) filling or coating the support with an electrophoretic matrix (col. 10-31-38);  
thereby obtaining an electrophoretic separation article (abstract).

The Liu et al. reference only mentions washing the electrophoretic support member with a strong alkali (col. 10, ll. 24-28).

The Ogawa reference teaches washing the surface of a silicon-containing support member with a weak alkali-based detergent before coating it with a polymer film (abstract and col. 26, ll. 11-14). It would have been obvious to one with ordinary skill in the art at the time the invention was made to also use or instead use a weak alkali-based detergent as taught by the Ogawa reference in the invention of the Liu et al. reference (who also discloses coating the surface of the support member with a polymer (col. 10,



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ll. 23-26)) because as taught by the Ogawa reference the weak alkali-based detergent will remove grease from the surface of the substrate member (col. 26, ll. 11-14). Barring evidence to the contrary, such as unexpected results, choosing a cleaning agent from known cleaning agents will depend on the desired cleanliness, possible harm from the cleaning solution to the surface to be cleaned, and the availability of cleaning solutions. As stated by Liu et al., "Bonding-defects are generally caused by particles and chemical contaminants on the wafer surface. Various surface clean-up methods (...) may be used for wafer cleaning" (col. 11, ll. 5-9).

Addressing claim 23, the Liu et al. reference teaches gels and entangled polymers in col. 4, ll. 30-35 and col. 10, ll. 24-55.

Addressing claim 24, as seen in Figures 5-11 the Liu et al. reference teaches a substantially tabular support member having columnar regions.

9. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (US 6,533,914 B1) in view of Ogawa (US 6,013,331) as applied to claims 22-24 above, and further in view of Church (US 4,213,873).

Addressing claims 25 and 26, although the Liu et al. reference as modified by the Ogawa reference does not mention whether the weak alkali solution is an organic solution, an inorganic solution, or any combination thereof, it is should be first noted that

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this is a comprehensive list, so the weak alkali solution of the Liu et al. reference as modified by the Ogawa reference must be either an organic solution, an inorganic solution, or a combination thereof.

The Church reference teaches a combined inorganic and organic weak alkali solution (claim 1) for cleaning glass (abstract). It would have been obvious to one with ordinary skill in the art at the time the invention was made to use the combined inorganic and organic weak alkali solution taught by the Church reference in the invention of the Liu et al. reference as modified by the Ogawa reference because the weak alkali solution of Church is very effective for removing oil and grease from glass (col. 1, ln. 60 – col. 2, ln. 27), which is a purpose for which Ogawa uses the weak alkali solution.

Addressing claim 27, the Church reference discloses that the inorganic base may be a carbonate (claim 1) such as hydrogen carbonate (*Table XII*, which spans columns 23 and 24 of the Church reference, for example).

***Allowable Subject Matter***

10. Claims 36 and 45-48 are allowed.

11. Claims 32, 33, 35, and 37-43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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12. Claims 28, 49, and 50 would be allowable if rewritten to overcome the rejection under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter:

a) Claim 28 requires the electrophoretic matrix composition to comprise at least two organic solvents. Osterhoudt et al. discloses an electrophoretic matrix comprising acrylamide and at least two organic solvents. However, the electrophoresis matrix when it comprises at least two organic solvents is not on a silicon-containing material. The electrophoresis matrix has been removed from the glass supports for staining (col. 11, ll. 7-10), which conventionally involves securing the electrophoresis matrix between two nylon meshes and immersing the electrophoresis matrix into a staining solution;<sup>1</sup>

b) Claims 32 and 33 require one of the at least two organic solvents to be formamide. In the first embodiment of Osterhoudt et al. having two organic solvents the organic solvents are isopropanol and acetone. In the other embodiment having two organic solvents the organic solvents are methanol and acetic acid;

c) Claim 35 requires the water-soluble polymer to be dextran, polyethylene glycol or cellulose. In Osterhoudt et al. the water-soluble polymer is polyacrylamide or a derivative thereof;

d) Claim 36 requires a composition comprising acrylamide to be polymerized in the presence of at least two organic solvents. In Osterhoudt et al. the polymer is precipitated in the presence of at least two organic solvents or the gel is stained in the presence of at least two organic solvents;

e) Claims 37-43 depend directly or indirectly from allowable claim 36;

f) Claim 45 requires, while performing electrophoresis, an electrophoretic gel comprising a polyacrylamide polymer or an acrylamide derivative and two or more organic solvents. In Osterhoudt et al. the polymer is precipitated in the presence of at least two organic solvents, that is, before performing electrophoresis, or the gel is stained in the presence of at least two organic solvents, that is, after performing electrophoresis; and

g) Claims 46-50 depend directly or indirectly from allowable claim 45.

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<sup>1</sup> Page 26-27 of Anthony Andrews, *Electrophoresis: Theory, Techniques, and Biochemical and Clinical Applications*, 2<sup>nd</sup> ed. Clarendon Press-Oxford, 1986.

***Final Rejection***

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX NOGUEROLA whose telephone number is (571) 272-1343. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NAM NGUYEN can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
ALEX NOGUEROLA  
Primary Examiner  
Art Unit 1753  
4/20/04